

5 What is claimed is:

1. A diagnostic pipette assembly including aspiration structure for automation, comprising:

a main pipette housing having a hollow interior defining a first chamber and a proximal end and an open distal end;

10 a pipette tip assembly connectable to the main pipette housing having a hollow interior defining a second chamber, the pipette tip hollow interior having open proximal and distal ends and the first and second chambers in fluid communication and the pipette tip including:

a plunger within the second chamber; and

15 structure for normally urging the plunger to a first position wherein the plunger closes the distal end of the pipette tip and allowing for the plunger to be urged to a second position wherein the plunger opens the distal end and allows fluid communication from the distal end of the pipette tip through the second chamber and into the first chamber.

20 2. The diagnostic pipette assembly as set forth in Claim 1, wherein the structure for normally urging the plunger to a first position comprises a one-way valve which is normally urged closed preventing fluid communication between the pipette tip distal end and the first and second chambers and being urgable to a second position allowing for such communication.

5 3. The diagnostic pipette assembly as set forth in Claim 1, wherein the structure for normally urging the plunger to a first position includes spring structure in the second chamber.

10 4. The diagnostic pipette assembly as set forth in Claim 1, wherein the plunger includes a first post and a second post and an enlarged plunger body between the posts, the plunger body is sized and shaped to close off the distal end of the pipette tip.

15 5. The diagnostic pipette assembly as set forth in Claim 4, wherein the structure for normally urging the plunger to a first position includes a spring mounted on the first post and the spring normally urges the plunger body against the pipette tip distal end.

6. The diagnostic pipette assembly as set forth in Claim 5, wherein the plunger body has an abutment surface contacting the distal end of the second chamber, the second chamber has a matching abutment surface and wherein both abutment surfaces are tapered.

20 7. The diagnostic pipette assembly as set forth in Claim 1, wherein the plunger includes a second post extending beyond the distal end of the pipette tip, the second post be depressable and upon depression the spring is compressed opening the distal end of the pipette tip.

25 8. The diagnostic pipette assembly as set forth in Claim 1, wherein the main pipette housing is connected to the pipette tip at the distal end of the first chamber and the proximal end of the second chamber and wherein the first post is adjacent the

5 connection of the first and second chambers and the structure for normally urging the plunger to a first position is connected to the first post.

9. The diagnostic pipette assembly as set forth in Claim 1, wherein the main pipette housing is connected to the pipette tip at the distal end of the first chamber and the proximal end of the second chamber and wherein the pipette distal end of the 10 housing is tapered and wherein the proximal end of the pipette tip is compatible tapered so that a fluid tight force fit seal is achieved.

10. The diagnostic pipette assembly as set forth in Claim 5, wherein the plunger body has an abutment surface contacting the distal end of the second chamber, the second chamber has a matching abutment surface and wherein both 15 abutment surfaces are tapered.

11. The diagnostic pipette assembly as set forth in Claim 1, wherein the main pipette housing is force fit into the pipette tip at the distal end of the first chamber and the proximal end of the second chamber for providing a fluid tight force fit seal.

12. The diagnostic pipette assembly as set forth in Claim 11, wherein the 20 main pipette housing and the pipette tip have mating abutment surfaces for providing for the force fit and wherein the abutment surfaces are matingly tapered to provide a fluid tight force fit seal.

13. A diagnostic pipette assembly including aspiration structure for automation, comprising:

25 a main pipette housing having a hollow interior and having open first and second ends communicating through the hollow interior, and an exterior surface, each

5 of the ends being open, the exterior surface having at least one window for viewing
diagnostic results; and
a pipette tip assembly connectable to the main pipette housing at the
second open end, the pipette tip assembly including a housing, the pipette tip housing
having a hollow interior and a first end proximate to the main pipette housing at the
10 second open end, the pipette tip housing ends communicating with one another through
the hollow interior, the interior of the tip body in communication with the interior of the
main pipette housing, the pipette tip assembly including structure within the tip housing
interior for closing and opening the first and second ends of the tip housing, the
structure having a normal first position wherein the first end of the pipette tip housing
15 being open and the second end of the pipette tip housing being closed and capable of
responding to pressure at the second end of the pipette tip housing by moving to a
second position wherein the first end of the pipette tip housing is remains open and the
second end of the pipette tip housing is open, wherein there is fluid communication
from the second end of the pipette tip through the pipette tip interior and the main
20 pipette housing interior.

whereby, the second end of the pipette tip is normally closed, but upon
the application of pressure, the second end of the pipette tip opens while closing the
first end and sample is capable of being aspirated into the housing when the pipette tip
responds to the pressure at the second end of pipette tip.

25 14. The diagnostic pipette assembly as set forth in Claim 13, wherein the
pipette tip assembly structure includes:

5 a plunger sized and shaped to open and close the second pipette tip opening and also to keep open the second end of the main pipette housing, the plunger including a first and a second post and a plunger body between the posts, the plunger body being of suitable size and shape to perform the closing and opening of the respective ends in the pipette tip and main pipette housing,

10 a spring within the tip housing having an interior compatibly engaging one of the plunger posts and normally urging the plunger to a first position wherein the first pipette tip end is open and the second end is closed and the second end pipette tip end yielding to pressure to move the plunger body to a second position wherein the second pipette tip end is open, allowing sample to be aspirated within the housing interior.

15. The diagnostic pipette assembly as set forth in Claim 13, wherein the pipette tip assembly body structure includes a plunger assembly, the plunger assembly includes the plunger having a first end which compatibly and slideably engages the second pipette tip end, a plunger body sized and shaped to fit snugly and matingly against each of the second end of the pipette tip for closing the second end at the appropriate time, the plunger assembly being normally in a first position wherein the plunger normally urges the second pipette tip end closed and the first pipette tip end and second main pipette housing ends are open and responding to pressure to define a second position wherein the first pipette end and second main pipette housing end are remain open while the second end is open and the pipette tip assembly is capable of automatically aspirating sample into the pipette housing, the plunger assembly, thereby defining a one way valve.

5 16. The diagnostic pipette assembly as set forth in Claim 13, wherein the exterior housing surface has a series of windows allowing for simultaneously viewing a series of diagnostic results.

10 17. The diagnostic pipette assembly as set forth in Claim 13, wherein the exterior housing surface has a plurality of windows allowing for simultaneously viewing of a plurality of diagnostic results.

15 18. A method of using a diagnostic pipette assembly for aspirating sample from a sample tube to the diagnostic pipette assembly, the steps of which comprise:

20 providing a diagnostic pipette assembly comprising: a main pipette housing having a hollow interior defining a first chamber and a proximal end and an open distal end; a pipette tip assembly connectable to the main pipette housing having a hollow interior defining a second chamber, the pipette tip hollow interior having open proximal and distal ends and the first and second chambers in fluid communication and the pipette tip including means for normally be closed and opened upon pressure;

25 lowering the pipette tip into a sample tube until the pressure caused from contacting the sample tube causes the pipette tip to open;

30 aspirating sample from the sample tube to the diagnostic pipette assembly; and raising the diagnostic pipette assembly and closing the pipette tip.

35 19. The method of using a diagnostic pipette assembly for aspirating sample as set forth in Claim 18, wherein the steps include:

40 after the raising of the pipette assembly, performing a multiple simultaneous testing of the sample.

5 20. The method of using a diagnostic pipette assembly for aspirating sample
as set forth in Claim 19, wherein the steps include:
lowering and raising the pipette by automated means.